

Product Features

Frequency: 1MHz ~ 4GHz

Gain: 32.1dB@1000MHz

Noise Figure: 1.1dB@1000MHz

Output Third-Order Intercept:

25.9dBm@1000MHz

Output Power for 1dB Compression:

15.3dBm@1000MHz

Supply Current: 51mA @ Vdd=5V

Package: SOT89

General Description

BR9115TA is a high-performance MMIC low noise amplifier designed using GaAs process. Covering a frequency range of 1MHz to 4GHz, it has been internally matched to 50 ohms, and only requires an external RF choke and blocking/bypass capacitors. The amplifier features low noise, high gain, and high gain flatness, suitable for both receiving and transmitting systems.

Application

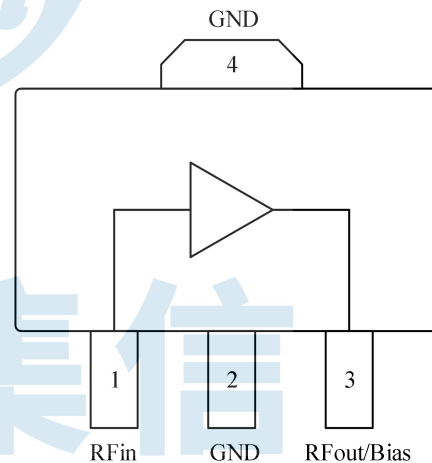
LTE/WCDMA/CDMA

IF Amplifier

Wireless Data Transmission

Driver Amplifier

Functional Block Diagram



Ordering Information

Part Number	Package	Description
BR9115TA	SOT89	1MHz ~ 4GHz Low Noise Amplifier

Electrical Specifications

Parameters	Min.	Typ.	Max.	Units	Test Condition
Gain	-	31.4	-	dB	30MHz
	-	32.1	-	dB	1000MHz
	-	31.5	-	dB	2400MHz
Output Power for 1dB	-	15.2	-	dBm	30MHz
Compression	-	15.3	-	dBm	1000MHz
Output Third-Order	-	28.3	-	dBm	30MHz
Interception	-	25.9	-	dBm	1000MHz
Noise Figure	-	1.1	-	dB	1000MHz
Input Return Loss	-	-11.2	-	dB	1000MHz
Output Return Loss	-	-13.5	-	dB	1000MHz
Reverse Isolation	-	-39.5	-	dB	1000MHz
Supply Voltage	-	+5	-	V	-
Supply Current	-	51	-	mA	-
Test Condition: Vdd=+5V, I=51mA, OIP3 spacing=1MHz, Pout=0dBm/tone, Temp=+25°C					

Absolute Maximum Ratings

Maximum Supply Voltage: +7V

Maximum RF Input Power: 20dBm

ESD Rating: Class 1B (0.5KV)

Recommended Working Conditions

Supply Voltage: +5V

Supply Current: 51mA

Operating Temperature: -55°C ~ +125°C

Storage Temperature: -65°C ~ +150°C

Note: Operation of the device outside the parameter ranges given absolute-maximum-ratings conditions may cause permanent damage, and. exposure to absolute-maximum-ratings conditions for extended periods will affect the reliability.

ESD WARNING

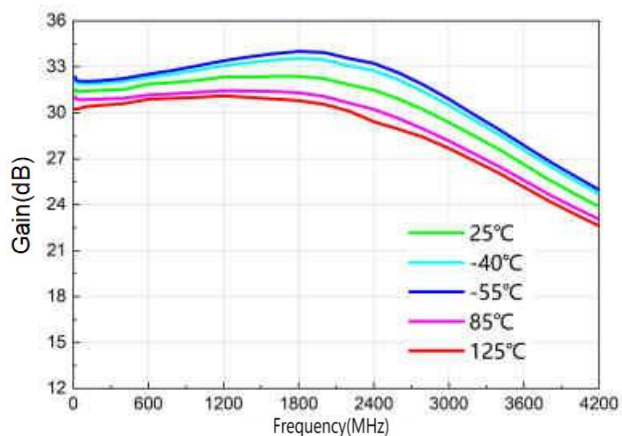

ELECTROSTATIC SENSITIVE DEVICE

OBSERVE HANDLING PRECAUTIONS

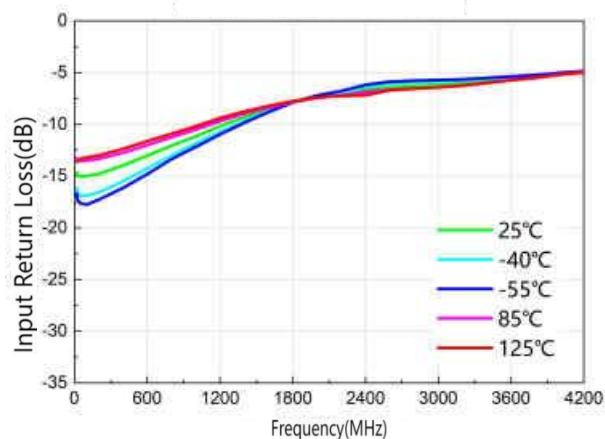


Typical Performance (EVB test results)

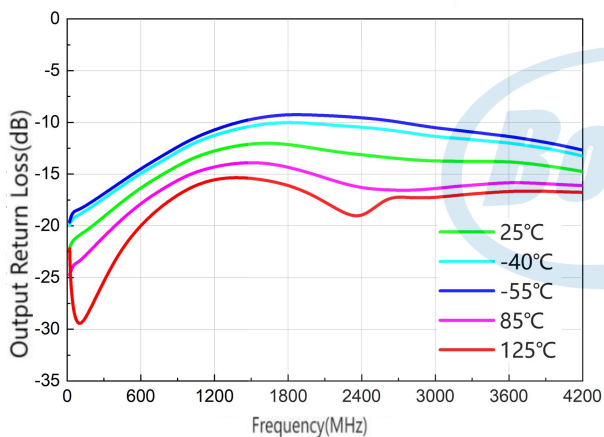
Parameters	Typ.							Units
Frequency	1	10	30	100	400	800	1000	MHz
Input Return Loss	-15.3	-15.2	-15.0	-15.0	-14.0	-12.1	-11.2	dB
Gain	30.9	31.2	31.4	31.4	31.5	32.0	32.1	dB
Reverse Isolation	-38.9	-39.4	-39.0	-38.9	-39.0	-39.3	-39.5	dB
Output Return Loss	-16.6	-20.0	-21.8	-20.9	-18.1	-14.9	-13.5	dB
Output Power for 1dB Compression	14.6	14.9	15.2	15.1	15.4	15.5	15.3	dBm
Output Third-Order Interception	25.6	28.3	28.3	28.5	27.7	26.5	25.9	dBm
Noise Figure	-	1.1	1.1	1.0	0.9	1.1	1.1	dB
Frequency	1400	1800	2000	2600	3000	3600	4000	MHz
Input Return Loss	-9.3	-7.9	-7.4	-6.4	-6.2	-5.6	-5.2	dB
Gain	32.3	32.4	32.2	30.9	29.4	26.6	24.7	dB
Reverse Isolation	-40.0	-40.6	-40.6	-39.6	-39.1	-38.5	-38.5	dB
Output Return Loss	-12.2	-12.1	-12.5	-13.4	-13.7	-13.8	-14.3	dB
Output Power for 1dB Compression	14.4	13.6	12.9	13.3	13.8	13.0	13.2	dBm
Output Third-Order Interception	24.9	24	22.9	23.2	23.3	24	22.8	dBm
Noise Figure	1.0	1.1	1.2	1.1	1.3	1.5	0.9	dB
Test Conditions: Vdd=+5V, I=51mA, OIP3 spacing=1MHz, Pout=0dBm/tone, Temp=+25°C								



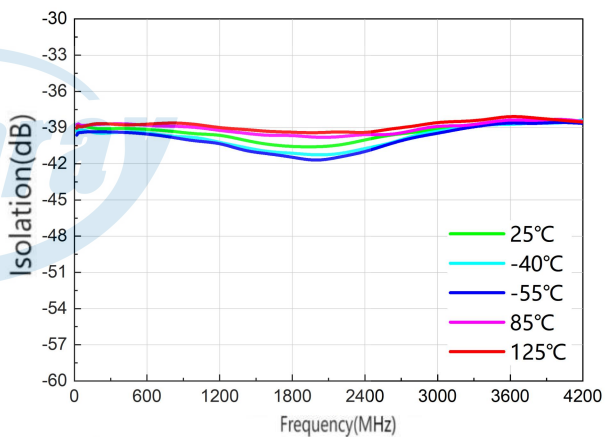
Gain vs. Freq



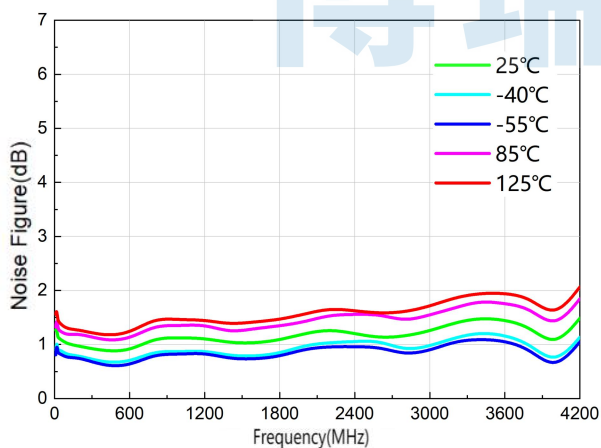
Input Return Loss vs. Freq



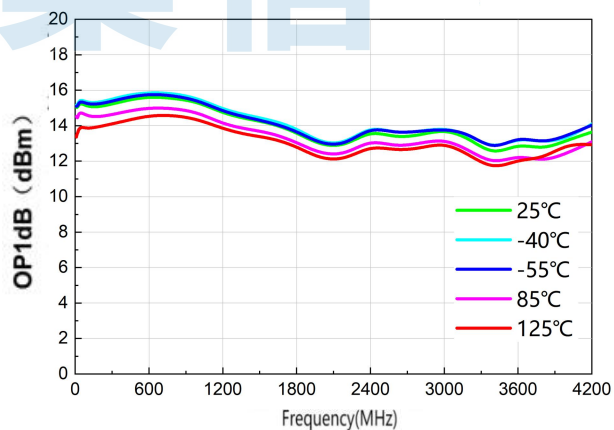
Output Return Loss vs. Freq



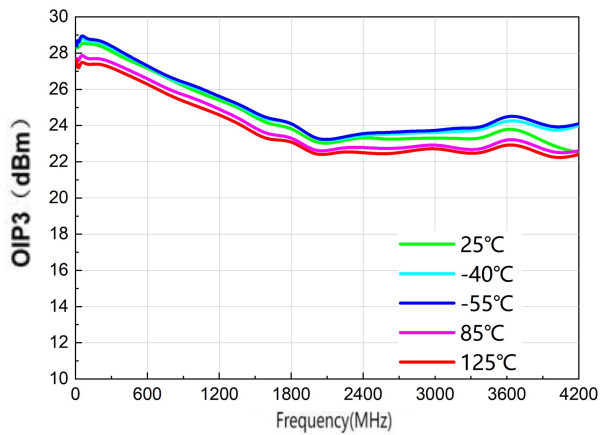
Reverse Isolation vs. Freq



Noise Figure vs. Freq

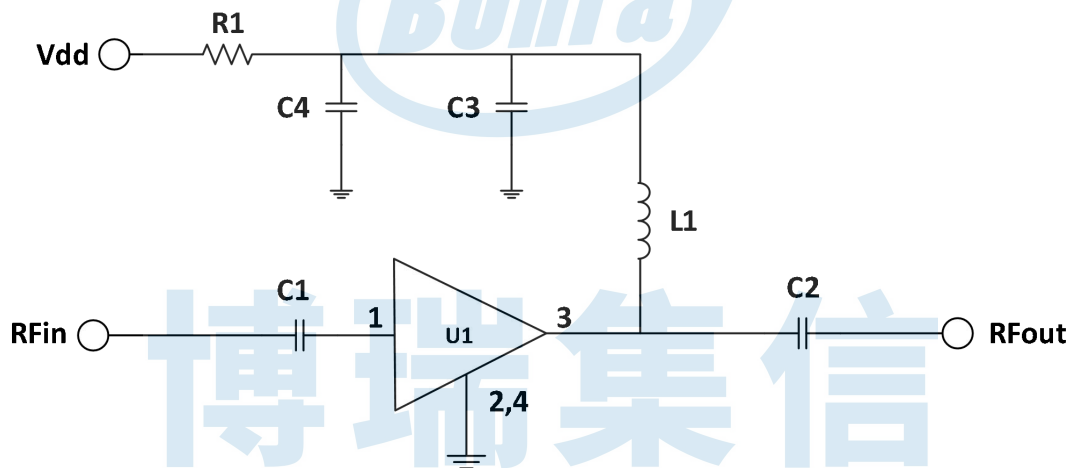


Output Power for 1dB Compression vs. Freq



Output Third-Order Intercept vs. Freq

Typical Application Schematic



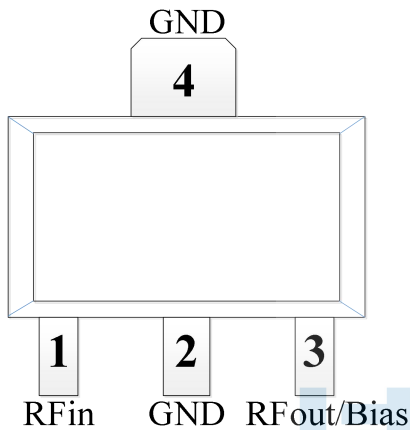
Bill of Material (1MHz~30MHz)

Reference Designator	Package	Value	P/N
R1	0402	0 Ω	RC0402FR-070RL
L1	1008	33uH	1008LS-333XJEC
C1, C2, C4	0402	2.2uF	GRM155C71A225KE11D
C3	0402	1nF	GRM1555C1H102JA01

Bill of Material (30MHz~4000MHz)

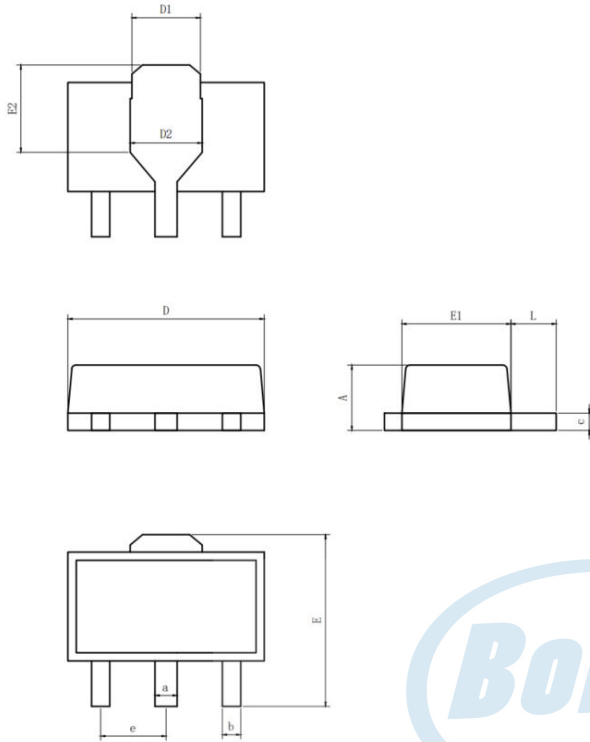
Reference Designator	Package	Value	P/N
R1	0402	0 Ω	RC0402FR-070RL
L1	0603	1.5uH	0603AF-152XJEW
C1, C2, C3	0402	1nF	GRM1555C1H102JA01
C4	0402	2.2uF	GRM155C71A225KE11D

Pin Configuration and Description



Pin Number	Pin Name	Description
1	RFin	RF input pin. A DC Block is required.
2, 4	GND	Ground pins. These pins must be connected to RF/DC ground
3	RFout/Bias	RF Output and DC bias pin. DC bias will also need to be injected through a RF bias choke/inductor for operation.

Package Dimensions (mm)



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	1.40	1.50	1.60
b	0.37	0.42	0.45
c	0.38	--	0.42
a	0.45	0.48	0.51
D	4.40	4.50	4.60
E	4.00	4.10	4.20
E1	2.40	2.50	2.60
e	1.50BSC		
L	0.89	1.045	1.20
D2	1.50	1.60	1.70
E2	2.218	2.318	2.418

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